IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants:	Craig David Weissman, Gregory Vincent Walsh, Eliot L. Wegbreit and Ankur S. Jain
Assignee:	E.Piphany, Inc/
Filing Date:	July 25, 2000
Serial No:	09/625,518
Title:	METHOD AND APPARATUS FOR CREATING A WELL-FORMED DATABASE SYSTEM USING A COMPUTER
Examiner:	Gwen Liang
Group Art Unit:	2172
Docket No:	EPI-015 US (7008042001)

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Alexandria, VA 22313-1450

APPEAL BRIEF UNDER 37 CFR § 1.192

The Applicants submit this Appeal Brief pursuant to the Notice of Appeal filed in this case on November 17, 2003. This brief is submitted in triplicate.

I. Real Party in Interest

The real party in interest is the assignee of the present application, which is E.piphany, Inc. of San Mateo, California.

II. Related Appeals and Interferences

To the best of Applicants' knowledge, no related appeals nor interferences are pending.

III. Status of the Claims

Claims 1 through 47 are currently pending. Claims 1 through 47 are appealed.

IV. Status of Amendments After Final Rejection

No amendments have been filed after the final rejection of June 16, 2003.

V. Summary of the Invention

The invention is defined by the claims and their equivalents. The present section of the Appeal Brief is set forth merely to comply with the requirements of 37 C.F.R. 1.192(c)(3).

One embodiment of the invention includes a method of defining a well-formed database system by defining the organization of the data in the database, and by defining the operations for that data. The definition can then be used to automatically create and populate the well-formed database system. The well-formed database system conforms to rules of correctness and produces results that conform to the rules. The organization is defined by a data organization definition that specifies tables, their columns, and the relationships between tables. The operations define procedures that operate on the tables and the table columns. Importantly, the operations are defined along with the tables, columns, and relationships, so that the resulting system is well-formed. Without this invention, database systems can be constructed in an arbitrary and inconsistent fashion which can result in an incorrectly constructed database system.

In some embodiments, when the database system is created, it automatically includes the following capabilities: foreign key tracking, automatic indexing, time and date information inclusion. By including some or all of such capabilities in the database system, the system will operate to comply with the rules of correctness.

The following are aspects of various embodiments of the invention. The constructed well-formed database system can automatically guarantee the following. (1) Two columns related by a relational join will be from the same domain. (2) If table A has a many-to-one relationship to table B, then table A has a foreign key that corresponds to table B. (3) A many-to-many relationship, between two tables A and B, is always expressed by an associative table that is created in a uniform way. For each unique many-to-many relationship, a unique value is created in the associative table and reused whenever that many-to-many relationship occurs. Denormalization is always done correctly. (4) Pulling information from one table to be put into another table, for access efficiency, is done correctly.

In some embodiments of the invention, the data organization definition includes a schema description for a datamart. The datamart automatically includes the inclusion of transaction type information and the mapping of source system keys. In these embodiments, the operation definitions define one or more of the following sets of operations: datamart population operations, aggregate creation and maintenance operations, query and result interface operations.

Although many details have been included in the description and the figures, the invention is defined by the scope of the claims. Only limitations found in those claims apply to the invention.

VI. Grouping of claims.

Claims 1-47 stand or fall together as group I, and claim 1 is the representative claim for this group.

VII. Issue

Whether claim 1 is patentable over U.S. Patent No. 6,263,341 issued to Smiley ("Smiley") in view of "Index Interface Links CASE and IBM's DB2," by Feuche ("Feuche").

VIII. Argument

Claim 1 stands rejected under 35 U.S.C. §103 based on U.S. Patent No. 6,263,341 issued to Smiley ("Smiley") in view of "Index Interface Links CASE and IBM's DB2," by Feuche ("Feuche").

The examiner states that "Feuche clearly teaches an automated process." Claim 1 does not recite "an automated process." Claim 1 recites a computer that generates tables from definitions that define "a set of relationships between tables and programs that operate on the set of tables and the set of table columns."

The examiner states that "It is obvious that the logical definitions used by the computer has to contain relationships between the tables and operations defining programs that operate on the tables, otherwise a true database like DB2 will not be built successfully." Applicants submit that the examiner is creating characteristics that are not disclosed by the reference. The Feuche

reference states that a link creates DB2 entities from logical record definitions found in Excelerator. The Excelerator XL Dictionary "includes column, table, view, index, table space, storage group and database." However, the link and the definitions disclosed in Feuche neither disclose nor suggest a computer that generates tables from definitions that define "a set of relationships between tables and programs that operate on the set of tables and the set of table columns," as recited in claim 1. Therefore, the Assignee submits that the Feuche reference neither discloses nor suggests a computer that generates tables from definitions that define "a set of relationships between tables and programs that operate on the set of tables and the set of table columns," as recited in claim 1.

The examiner states that the Feuche reference "really is a tool to *help you build* DB2 databases. . . ." (Emphasis added). The Assignee submits that the Feuche reference still requires work on the part of the user. Because the Feuche reference fails to have the computer use a definition that defines "a set of relationships between tables and programs that operate on the set of tables and the set of table columns" to generate the tables, Feuche suffers from the same deficiency as Smiley. Feuche simply neither discloses nor suggests a computer that generates tables from definitions that define "a set of relationships between tables and programs that operate on the set of tables and the set of table columns," as recited in claim 1.

The examiner states that the Feuche reference "does not explicitly teach that the logical definitions, based on which DB2 tables are automatically created, contain definitions that define relationships between tables and programs that operate on the set of tables, the Smiley reference does teach these definitions as stated above."

In Smiley, the relationships between tables and programs that operate on the set of tables are generated the old fashioned way, by a human programmer writing code by hand. Clearly, Smiley does not disclose "the computer using the definition to generate the set of tables" from a definition that defines "a set of relationships between the tables of the set of tables," and "programs that operate on the set of tables and the set of table columns," as recited in claim 1.

Smiley's system and Feuche's system, even when combined, neither teach nor suggest a computer that generates tables from definitions that define "a set of relationships between tables and programs that operate on the set of tables and the set of table columns," as recited in claim 1. The Assignee submits that claim 1 is patentable over Smiley in view of Feuche.

IX. CONCLUSION

For the above reasons, Applicants respectfully submit that rejection of claims 1-47 based on 35 U.S.C. § 103(a) has been overcome. Accordingly, Applicants request that the Board of Patent Appeals and Interferences overrule the Examiner and allow claims 1-47.

DATE: March 12, 2004

Respectfully submitted,

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APPENDIX: Pending Claims

Listing of appealed claims 1-47:

1. A method of creating a system for creating a well-formed database system using a computer, the method comprising:

the computer accessing a definition of the system, the definition defining a schema for use by the system, the schema defining a set of tables, a set of columns that correspond to the set of tables, and a set of relationships between the tables of the set of tables, the definition further defining a set of operations for manipulating the data, the set of operations defining programs that operate on the set of tables and the set of table columns; and

the computer using the definition to generate the set of tables.

2. The method of claim 1 wherein the set of tables includes a first table and a second table, wherein the first table includes a first column, wherein the second table includes a second column, and wherein the first column and the second column are related by a join and are therefore guaranteed to be from the same domain.

3. The method of claim 1 wherein the set of tables includes a first table and a second table, and wherein the definition defines that the first table relates to the second table by a many to one relationship, and wherein the generating the set of tables includes automatically generating a foreign key column in the first table, wherein the foreign key column is for holding a foreign key to the second table.

4. The method of claim 1 wherein the set of tables includes a first table and a second table, and wherein the definition defines that the first table relates to the second table by a many to many relationship, and wherein the generating the set of tables includes automatically generating an associative table corresponding to the first table and the second table, and wherein the associative table has a unique value created for each unique many-to-many relationship between the first table and the second table.

5. The method of claim 1 wherein the set of tables includes a first table and a second table, and wherein the first table includes one or more columns from the second table, and wherein said one or more columns are automatically populated from the one or more columns.

6. The method of claim 1 wherein the computer using the definition to generate the set of tables also includes the computer performing at least some of the set of operations on at least some of the set of tables.

7. The method of claim 1 wherein a transaction type column is automatically included in some tables of the set of tables.

8. The method of claim 1 wherein a date column is automatically included in some tables of the set of tables.

9. The method of claim 1 wherein a source system key column is automatically included in some tables of the set of tables.

10. The method of claim 1 wherein the definition defines a set of source system extraction operations, wherein the set of source system extraction operations are for extracting

data from a source system and for manipulating the data for populating the database, and wherein the set of source system extraction operations correspond to the schema definition.

11. The method of claim 10 wherein the source system extraction operations correspond to the schema definition by populating source system data into the database system according the schema definition.

12. The method of claim 1 wherein the definition defines a set of aggregates for the database system, the set of aggregates corresponding to the schema definition, the method further comprising:

the computer using the definition to create a set of aggregate tables corresponding to the set of aggregates; and

populating the set of aggregate tables.

13. The method of claim 12 wherein the set of aggregates corresponds to the schema definition by defining which aggregates should be made from which tables in the database system.

14. The method of claim 12 wherein the definition defines an aggregate operation for an aggregate of the set of aggregates.

15. The method of claim 14 wherein the aggregate operation includes a SUM operation.

16. The method of claim 14 wherein the aggregate operation includes an AVERAGE operation.

17. The method of claim 1 wherein the definition includes a user interface definition for querying the database and for presenting results, the user interface definition corresponding to the schema definition.

18. The method of claim 17 wherein the user interface definition specifies which columns from which tables can be used in a query.

19. The method of claim 1 wherein the definition defines a set of source system extraction operations, a set of aggregates, and a user interface definition, that correspond to the schema definition.

20. The method of claim 1 wherein the database system includes a datamart, wherein the schema definition includes a star schema definition, wherein the set of tables includes a set of fact tables and a set of dimension tables.

21. A system comprising:

a database system;

a first program for accessing a definition of the schema for the database system, the schema defining a set of tables, a set of columns corresponding to the set of tables, and a set of relationships between the tables of the set of tables, the definition further defining a set of operations for manipulating the data, the set of operations defining programs that operate on the set of tables and the set of table columns, the first program further for using the definition to generate the set of tables.

22. The system of claim 21 wherein the set of tables includes a first table and a second table, wherein the first table includes a first column, wherein the second table includes a

second column, and wherein the first column and the second column are related by a join and are therefore guaranteed to be from the same domain.

23. The system of claim 21 wherein the set of tables includes a first table and a second table, and wherein the definition defines that the first table relates to the second table by a many to one relationship, and wherein the generating the set of tables includes automatically generating a foreign key column in the first table, wherein the foreign key column is for holding a foreign key to the second table.

24. The system of claim 21 wherein the set of tables includes a first table and a second table, and wherein the definition defines that the first table relates to the second table by a many to many relationship, and wherein the generating the set of tables includes automatically generating an associative table corresponding to the first table and the second table, and wherein the associative table has a unique value created for each unique many-to-many relationship between the first table and the second table.

25. The system of claim 21 wherein the set of tables includes a first table and a second table, and wherein the first table includes one or more columns from the second table, and wherein said one or more columns are automatically populated from the one or more columns.

26. The system of claim 21 wherein the first program includes an enterprise manager for accessing the definition, causing the generation of the set of tables, and causing the population of the tables.

27. The system of claim 21 further comprising a database, the database for storing the set of tables.

28. The system of claim 21 further comprising an aggregate building program for accessing a definition of a set of aggregates and the definition of the schema and for generating the set of aggregates from the definition of the set of aggregates and the definition of the schema.

29. The system of claim 21 further comprising a query and reporting program for generating a user interface from a definition of the user interface and the definition of the schema.

30. A system comprising:

means for accessing a definition of the system, the definition defining a schema for use by the system, the schema defining a set of tables, a set of columns corresponding to the set of tables, and a set of relationships between the tables of the set of tables, the definition further defining a set of operations for manipulating the data, the set of operations defining programs that operate on the set of tables and the set of table columns; and

means for using the definition to generate the set of tables.

31. The system of claim 30 wherein the set of tables includes a first table and a second table, wherein the first table includes a first column, wherein the second table includes a second column, and wherein the first column and the second column are related by a join and are therefore guaranteed to be from the same domain.

32. The system of claim 30 wherein the set of tables includes a first table and a second table, and wherein the definition defines that the first table relates to the second table by a many to one relationship, and wherein the generating the set of tables includes automatically generating a foreign key column in the first table, wherein the foreign key column is for holding a foreign key to the second table.

33. The system of claim 30 wherein the set of tables includes a first table and a second table, and wherein the definition defines that the first table relates to the second table by a many to many relationship, and wherein the generating the set of tables includes automatically generating an associative table corresponding to the first table and the second table, and wherein the associative table has a unique value created for each unique many-to-many relationship between the first table and the second table.

34. The system of claim 30 wherein the set of tables includes a first table and a second table, and wherein the first table includes one or more columns from the second table, and wherein said one or more columns are automatically populated from the one or more columns.

35. The system of claim 34 wherein the definition of the system further includes a definition of the aggregates for the system, the system further comprising:

means for generating a set of aggregates from the definition of the aggregates and the definition of the schema.

36. The system of claim 33 wherein the definition of the system further includes a definition of a user interface for the system, the system further comprising:

means for generating the user interface from the definition of the user interface and the definition of the schema.

37. The system of claim 33 wherein the definition of the system includes a definition of aggregates for use in the system and a definition of a query and reporting mechanism interface for the system, the set of tables includes a set of fact tables and a set of dimension tables, and wherein the system further comprises:

means for generating the set of fact tables;

means for generating the set of dimension tables;

means for generating a set of aggregate tables; and

means for generating a query and reporting mechanism interface.

38. A computer program product comprising:

a memory medium; and

a computer program stored on the memory medium, the computer program comprising instructions for accessing a definition of a system, the definition defining a schema for use by the system, the schema defining a set of tables, a set of columns corresponding to the set of tables, and a set of relationships between the tables of the set of tables, the definition further defining a set of operations for manipulating the data, the set of operations defining programs that operate on the set of tables and the set of table columns, and instructions for using the definition to generate the set of tables.

39. The computer program product of claim 38 wherein the set of tables includes a

first table and a second table, wherein the first table includes a first column, wherein the second table includes a second column, and wherein the first column and the second column are related by a join and are therefore guaranteed to be from the same domain.

40. The computer program product of claim 38 wherein the set of tables includes a first table and a second table, and wherein the definition defines that the first table relates to the second table by a many to one relationship, and wherein the generating the set of tables includes automatically generating a foreign key column in the first table, wherein the foreign key column is for holding a foreign key to the second table.

41. The computer program product of claim 38 wherein the set of tables includes a first table and a second table, and wherein the definition defines that the first table relates to the second table by a many to many relationship, and wherein the generating the set of tables includes automatically generating an associative table corresponding to the first table and the second table, and wherein the associative table has a unique value created for each unique many-to-many relationship between the first table and the second table.

42. The computer program product of claim 38 wherein the set of tables includes a first table and a second table, and wherein the first table includes one or more columns from the second table, and wherein said one or more columns are automatically populated from the one or more columns.

43. A computer data signal embodied in a carrier wave comprising:

a computer program, the computer program comprising instructions for accessing a definition of a system, the definition defining a schema for use by the system, the schema

defining a set of tables, a set of columns corresponding to the set of tables, and a set of relationships between the tables of the set of tables, the definition further defining a set of operations for manipulating the data, the set of operations defining programs that operate on the set of tables and the set of table columns, and instructions for using the definition to generate the set of tables.

44. The computer data signal embodied in the carrier wave of claim 43 wherein the set of tables includes a first table and a second table, wherein the first table includes a first column, wherein the second table includes a second column, and wherein the first column and the second column are related by a join and are therefore guaranteed to be from the same domain.

45. The computer data signal embodied in the carrier wave of claim 43 wherein the set of tables includes a first table and a second table, and wherein the definition defines that the first table relates to the second table by a many to one relationship, and wherein the generating the set of tables includes automatically generating a foreign key column in the first table, wherein the foreign key column is for holding a foreign key to the second table.

46. The computer data signal embodied in the carrier wave of claim 43 wherein the set of tables includes a first table and a second table, and wherein the definition defines that the first table relates to the second table by a many to many relationship, and wherein the generating the set of tables includes automatically generating an associative table corresponding to the first table and the second table, and wherein the associative table has a unique value created for each unique many-to-many relationship between the first table and the second table.

47. The computer data signal embodied in the carrier wave of claim 43 wherein the set of tables includes a first table and a second table, and wherein the first table includes one or more columns from the second table, and wherein said one or more columns are automatically populated from the one or more columns.

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TRANSMITTAL FORM

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Application Number	09/625,518
Filing Date	July 25, 2000
First Named Inventor	Craig David Weissman
Art Unit	2172
Examiner Name	Gwen Liang
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ENCLOSURES *(check all that apply)*

- ☒ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Amendment / Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
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- ☐ Response to Missing Parts/ Incomplete Application
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- ☐ Drawing(s)
- ☐ Licensing-related Papers
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Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

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Signature	Fabio E. Marino, Reg. # 43,339
Date	March 12, 2004

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FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 750

Complete if Known	
Application Number	09/625,518
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First Named Inventor	Craig David Weissman
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METHOD OF PAYMENT *(check all that apply)*

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:

Deposit Account Number: 50-2518

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FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filling fee	

SUBTOTAL (1) ($) 0

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

			Extra Claims		Fee from below	=	Fee Paid
Total Claims		-20 **	0	X		=	0
Independent Claims		-3 **	0	X		=	0
Multiple Dependent				X		=	0

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 0

***or number previously paid, if greater; For Reissues, see above*

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	420
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	330
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive – unavoidable	
1453	1,330	2453	665	Petition to revive – unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17 (q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	
Other fee (specify) ____					

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SUBTOTAL (3) ($) 750

SUBMITTED BY				Complete *(if applicable)*	
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Signature				*Date*	March 12, 2004

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